OUR BOOK SHELF.

Die Wissenschaftlichen Grundlagen der analytischen Chemie. By W. Ostwald. Fünfte Auflage. Pp. xii+233. (Leipzig: W. Engelmann, 1910.) Price 8 marks.

The appearance of a fifth edition of this well-known book affords gratifying evidence of the widespread recognition that the study of analytical processes from the theoretical point of view is a necessary adjunct to the practical work of the laboratory. At the same time, the continued demand for a book of this character is a striking testimony to the general utility of the ionic hypothesis in the consideration of the problems of analytical chemistry. In spite of the many attacks, persistent and vigorous, which have been made upon the theory of Arrhenius, it has to be admitted that its position as a working hypothesis is stronger to-day than it was at the time of issue of the first edition of this volume.

The changes to be found in the new edition are comparatively few. The principal novelty consists in a slightly modified treatment of the theoretical portion as a result of the introduction of the view that the stochiometric laws are, in a certain sense, a consequence of the methods which are employed for the preparation and identification of compounds. In this connection the conception of *phase* is introduced, and since a phase may be either a pure substance or a solution, the problem of differentiating between these two classes is obviously one which falls within the sphere of analytical work.

Little need be said of the section dealing with the applications of the ionic theory to specific chemical reactions. In the explanation of the action of the indicators used in acidimetry, it is now admitted that the indicator ion has probably a different structure from that of the non-ionised indicator molecule. Few changes have, however, been found necessary as a result of recent work, and the characters are retained which have earned for the book the right to be counted amongst the classics of the literature of analytical chemistry.

H. M. D.

The "Wellcome" Photographic Exposure Record and Diary, 1911. Pp. 280. (London: Burroughs, Wellcome and Co., n.d.) Price 1*s.*

This little pocket-book is a veritable *vade mecum* of photography in tabloid form, and while the present writer never wishes to be without his copy when out with his camera, he is sure other workers, when they become acquainted with the contents of these pocket-books, will express the same sentiments.

There is no necessity to recapitulate in detail the literary portions of this book, but suffice it to say that they are of a very interesting and useful character, and besides dealing with the technical difficulties of exposure, development, &c., and colour photography, they include directions concerning negative-making, tank or stand developing, printing, toning, intensifying, and so on. In addition to the portion devoted to the recording of negatives exposed, there is ample room for memoranda to replace the use of an ordinary notebook. An important feature is the simple and effective exposure calculator attached to the inside of the cover, the correct exposure being read off under all conditions of light and subject by a turn of the scale. For this issue, this calculator is rendered even more simple for those who always employ plates or films of one speed. By the insertion of a special disc, which may be obtained gratis from the publishers, the exposure can be read off at a glance for any stop. This special disc will be particularly useful to those who expose yards of film in their Kodaks or other hand cameras.

It should be remembered that three editions of this "Record and Diary" are published, with corresponding data for the northern hemisphere and tropics, the southern hemisphere and tropics, and the United States of America. Handy in form, and bound in a neat green cover, it will find favour with most photographers.

Reason and Belief. By Sir Oliver Lodge. Pp. xiv+212. (London: Methuen and Co., Ltd., 1910.) Price 3*s.* 6*d.* net.

This is a contribution to the literature of reconciliation. The science and religion of the nineteenth century were hopelessly at variance, chiefly in consequence of the latter's claim to pronounce in matters of cosmology (*e.g.* Mr. Gladstone's "Impregnable Rock of Holy Scripture"). But the conditions are now different. Religion is being regarded as "an attitude of the soul to all that it knows of cosmic law"—in Myers's phrase—rather than as a matter of dogma; and science, also, is learning humility. Crude materialism is seen to be no complete solution of the riddle of the universe, for we do not know what "matter" is. Moreover, psychology is bringing to light certain phenomena which orthodox scientific theories do not seem to cover. The time, therefore, is ripe for a *rapprochement*; and among leaders of thought on the scientific side of the reconciliation movement, Sir Oliver Lodge is by far the most eminent and the most influential.

Man is a being who is temporarily clothed in matter, for purposes of education. He has lived before birth, and will live after "death," in modes only dimly conjecturable at present. If so, what difficulty is there in supposing that an exceptionally great and loving spirit, seeing the race's need, may voluntarily take a body of flesh, in order to teach his similarly incarnated brother spirits? This shows the way to a reconciliation of reason and belief on a cardinal doctrine of Christianity.

The volume is enriched with apt quotations from many sources—Wordsworth, Browning, Tennyson, Swinburne, Myers, Francis Thompson, &c. Its style is popular and clear, but the thought throughout is deep and suggestive. The latter part has an illuminating chapter on the scope of science, and also deals with the teaching of the Old Testament in the light of evolution, and with anticipated criticism.

J. A. H.

Altitude Tables, computed for Intervals of Four Minutes between the Parallels of Latitude 0° and 30° and Parallels of Declination 0° and 24°, designed for the Determination of the Position-line at all Hour Angles without Logarithmic Computation. By F. Ball. Second edition. Pp. ix+245. (London: J. D. Potter, 1910.) Price 15*s.* net.

The appearance of a second and improved edition of these tables is welcome on several grounds, but mainly as an indication of increasing accuracy in nautical calculations. We hope, too, that the demand for such tables may be regarded as a proof of the growing popularity of the method of determining the position of a ship at sea proposed by Captain Marcq St. Hilaire, of the French Navy. This method, though theoretically superior to that of finding the Sumner lines by the ordinary process, has not been generally adopted, on account of the slight increase in the computations required. Seeing that in the St. Hilaire method, the observations may be made at any time with equally good and consistent results, whereas in the ordinary method, observations taken near the meridian may have to be repeated nearer the prime vertical, the objections that have been alleged against the newer method on account of the length of the

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observations ought not to be allowed to prevail. The sailor expects to find tables at hand that shall curtail the arithmetical processes to a minimum, and these tables, the main feature of which is to give readily and accurately, at sight, the altitude of the sun or of stars within the ecliptic limits, at least in the more frequented latitudes, will remove one of the objections that have been urged.

Other tables suggested by experience have been added in this edition in order to increase its utility and avoid the necessity of further reference. With these tables and a nautical almanac, it is said that the navigator can complete his task. We would, however, allow him a book of logarithms, for the tables given here are too restricted to serve any useful purpose. One might need to check the accuracy of some of the quantities supplied, though we have no reason to doubt the general accuracy of the tables, for which Dr. Crommelin and some of the staff of the Royal Observatory are responsible.

Metallography Applied to Siderurgic Products. By Humbert Savoia. Translated by R. G. Corbet Pp. xii+180. (London: E. and F. N. Spon, Ltd., 1910.) Price 4*s.* 6*d.* net.

The Italian original of this little book was obviously intended to bring the more essential parts of the metallography of iron and steel within the reach of Italian metallurgists, but what motive there can be to justify the translation into English of such an elementary compilation it is not easy to understand, particularly as satisfactory original works in our own language are now available. In the book as it stands the feats of the author are largely disguised by the achievements of the translator, who appears to have invented an entirely new nomenclature not only for purely metallographic terms but for well-known and widely-used technical words. That the translator disclaims technical knowledge of the subject-matter of the book and begs for indulgence in regard to technical terms cannot, unfortunately, alter the fact that much of the book would be rendered unintelligible to the non-expert reader for whom it appears to be intended by such glaring translator's errors as the use of "tempered" for "hardened," mechanical "elaboration" for mechanical "working," "resolving" for "dissolving," "composite" for "compound" in its chemical sense, "soldered" for "welded," "strain of extension" for "tensile strength," and many others; perhaps the most amusing example of the translator's misinterpretation of the Italian words occurs in the description of the Le Chatelier thermo couple as consisting of "platinum and radiated platinum."

Apart from these serious defects, the subject-matter of the book is not free from errors; thus the text of p. 69 definitely suggests that "pearlite" is formed from molten steel, and indeed throughout the text the difference between the eutectoid pearlite and a true eutectic is not indicated. The most satisfactory portions of the book are those dealing with malleable cast-iron, where the author is evidently on his own ground, but, taken as a whole, the book cannot be recommended to students of metallography.

W. R.

Researches upon the Atomic Weights of Cadmium, Manganese, Bromine, Lead, Arsenic, Iodine, Silver, Chromium, and Phosphorus. By G. P. Baxter, and others. Pp. vii+185. (*Washington: Carnegie Institution*, 1910.)

This memoir, which is published through the munificence of the Carnegie Institution of Washington, is one of the many series of similar researches which we owe to the Harvard School of Chemistry. It comprises eleven separate investigations on the atomic weights of the elements enumerated in the title, the results of which have been published in American and German periodicals at intervals during the past six years.

In the form in which they are now presented a few minor alterations have been made, necessitated by a more precise knowledge of certain of the fundamental values upon which the determinations are based. Certain of the original papers have had their subject-matter rearranged. The eventual results have, however, already been incorporated in the last annual report of the International Committee on Atomic Weights, and are therefore readily accessible to all workers.

Practical Measurements. By A. W. Siddons and A. Vassall. Pp. xiv+60. (Cambridge: University Press, 1910.) Price 1*s.* 6*d.*

This book is a development of the course of physical measurements founded by Mr. Ashford at Harrow in 1896. Recently the earlier portions have been worked under the mathematical staff. The course follows closely the syllabus of the joint committee of the Mathematical and Science Masters' Associations. It is important that teachers should read the authors' observations on p. vii., as there is a danger that the work may lead boys to suppose that "science" and "measurement" are synonymous. The course is open to the serious objection that it provides a long series of measurements which are purposeless from the boy's point of view. Thanks to the experience and shrewd observation of the authors, the book may serve as a trustworthy aid to mathematical teachers who are undertaking, for the first time, the control of classes engaged in laboratory work. Such teachers will find their routine work improved as well as lightened by its use. To sum up, the book provides a well-planned drill of a not too interesting kind, and makes it possible to insist on the work being properly done by the boy who desires to have a too easy time.

The Year-Book of the Scientific and Learned Societies of Great Britain and Ireland: A Record of the Work Done in Science, Literature, and Art During the Session 1909–1910 *by Numerous Societies and Government Institutions. Compiled from Official Sources.* Pp. iii+370. (London: Charles Griffin and Co., Ltd., 1910.) Price 7*s.* 6*d.*

This is the twenty-seventh annual issue of a widely known and very useful work of reference to which attention has often been directed in these columns. We have noticed several additions to the list of societies and associations, the work of which is described. It seems strange, however, to find in a volume issued at the end of 1910 particulars of the Winnipeg meeting of the British Association in 1909 and no references to the meetings of the association at Sheffield this year.

Cambridge. Described by N. Barwell. Pp. 64. *Norwich and the Broads.* Described by W. Jerrold. Pp. 56. *The Heart of Wessex.* Described by S. Heath. Pp. 64. All pictured by E. W. Haslehust. (London: Blackie and Son, Ltd., 1910.) Price 2*s.* net each.

These latest additions to the series known as "Beautiful England" are likely to be popular guide-books to the districts with which they are severally concerned. Mr. Haslehust has been successful in giving in his pictures delightful impressions of the different counties, and visitors will be glad to have the volumes to remind them of the beauties of the holiday resorts they have frequented. The descriptions are gossipy and entertaining.

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